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Thesis

MUSICAL INSTRUMENTS FROM EARLIEST RECORDS TO THE YEAR I A. D.

by

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INTRODUCTION

A. The Purpose And Limitations Of This Thesis.

In this thesis, I have endeavored to produce a concise, authoritative, inclusive discussion of the use of musical instruments among the various races during the period specified: namely, from earliest records to the year 1. A. D.

Because of the lack of satisfactory information on the musical instruments of many tribes and nations and because of the lack of space for deductive and speculative discussion, it is necessary to limit this thesis to the treatment of the musical history of the following: The Egyptians, the Assyrians, the Hebrews, the Chinese, and the Greeks. Roman instruments will not be treated in great detail, as Rome failed to reach an individualistic stage in musical culture during this period.

Three general divisions of instrumental history will be treated: (1) Primitive music, which is mostly conjecture, myth, and tradition, and will not, therefore, be developed extensively; (2) Semi-civilized music, which includes the music of ancient peoples, as the Egyptians, Assyrians, Hebrews, and one nation existing today which still retains its ancient system China; (3) The beginnings of civilized music as found in Greece down to the year 1 A. D.

Of each instrument discussed there are so many variations that it would be impossible to describe each, so that it is necessary to further limit this thesis to a thorough dis-

cussion of the general type, with occasional references to the more interesting and important variations.

A study of instrumental history is most valuable for a thorough background by the archeologist, the ethnologist, and the historian, as well as the musician. The gropings of a tribe to produce sounds to express its emotions is the groping of a national soul to express its deepest feelings-- love, hate, fear, joy, sorrow. It has been said that a child learns more during the first six years of life than he does after that. Is it not also true that there is a longer step from the sounds of nature to the development of the water-organ than from the water-organ to the great concert organ of our day? In order to really understand this phase of their life; in order to thoroughly appreciate our modern instruments, it is necessary to have an acquaintance with their ancestors.

B. The Origin Of Musical Instruments.

If all civilization were suddenly swept away and we were placed back in an opera-less, concerto-less, symphony-less world, we would have a much deeper appreciation of the instruments as developed by primitive man.

Nature is full of music to the discerning ear and eye. The water-fall, the bird's call, the rustle of the wind through long grasses, the swish of the incoming tide in perfect rhythm, the war dances of monkeys, gorillas, and elephants as witnessed by big-game hunters, all point to the age-old phenomenum of

rhythm.

Various conflicting theories as to the origin of music among primitive people have been advanced. The theories may be grouped under three general heads: (1) that music first found expression in rhythm; (2) that it came about through melody; (3) that rhythm and melody were contemporaneous. However, it is quite generally agreed that vocal music preceded instruments, and that rhythmical instruments were the first to be developed.

There has been considerable controversy over the first instruments to be developed. Engel and Rowbotham hold that the drum was the first. Wallaschek takes vigorous exception. He states that the most ancient is the flute. "Drumming, it is true, was the first attempt at the practice of music, or rather of time-keeping, but the drum was by no means the first instrument."[1] His argument for placing the flute before the drum is based (1) on the fact that recent excavations have found flutes and fifes dating back to periods in which no drums can be found, and (2) on the fact that flutes are much simpler in construction than the drum which requires a stretched skin.

However, Wallaschek's argument does not exclude the precedence of all pulsatile instruments. At least, there is no evidence yet unearthed to combat the assumption that the dance and war cry came first, followed by the clapping of

1. Wallaschek, Richard. Primitive Music. p. 87.

hands to reenforce the sounds made by feet and voice, followed by the beating of a club on a tree (accidently attempted at first, perhaps) to produce a higher emotional tension.

Archaeologists have uncovered a number of instruments in their excavations which throw much light on the age of instruments. In a cavern at Gourdan, M.E. Pietto found an instrument which he calls a neolithic flute, which had been made by piercing holes in the side of a bone. From surrounding circumstances it was decided the flute belonged to the Neolithic or New Stone Age. Another flute made from a stag-horn, with three holes bored at equal distances to produce four diatonic tones, was found near Poitiers, dating back to the Stone Age. A rude gong, probably struck on great occasions, was unearthed in Venezuela, belonging probably to the same period. Egyptian flutes, thought to date at 3000 years B. C., the Egyptian bronze period, are found capable of producing the diatonic scale.

Clappers, bone whistles, twanged string instruments and pipes seem to be quite common in prehistoric remains. All of this, of course, gives considerable support to Wallaschek's hypothesis of the priority of flatile over pulsatile instruments. The solution, however, must remain controversial until future excavations shed further light on the subject.

C. Sources of Information.

There are three main sources from which we can ob-

tain information on the instruments prior to the Christian era. These are: (1) the discovery of buried instruments in archaeological excavations; (2) pictures of instruments and ensembles carved on the walls of tombs, also sculptures, pictures on vases, wall paintings, records and parchments; (3) the Bible, secular writings and folklore that have come down to us.

References have already been made, under "Origin of Musical Instruments", to the more important excavations and discoveries--the cavern at Gourdan (Haute Garonne), Poitiers, and the Egyptian tomb of the Bronze Age. Mention should also be made to the Napoleonic Expedition which opened new fields and aroused public interest. Innumerable tombs with their instruments and their wall carvings have given much valuable information. Among these, is the famous tomb of Tut-aukh-ammon, a tomb at Thebes of the 18th Dynasty, the Tomb of Ramoses III. The British Museum, the Berlin Museum, the Museum at Paris, and the Museum at Copenhagen hold collections made from excavations.

Our principle knowledge of Assyrian instruments comes to us from bas-reliefs found during excavations in the mounds of Nimroud, Khorsabad, and Kouyunjik (formerly, Nineveh) situated near the Tigris River, close to Mosul, Asiatic Turkey.

Several artists have portrayed for us their conception of these early instruments. Among the reproductions are Tissot's Jepthah's Daughter, Copping's By the Waters of Babylon, and Brocklin's Daphne and Amaryllis with Pipes of Pan.

PART ONE

The Description of Musical Instruments as Developed by the Various Races.

A. A Detailed Description of the Percussion Instruments.

We are acquainted with three different kinds of ancient Egyptian drums. The first is very similar to the small hand-drum which is in use in Asia today. It measures two or three feet in length. The ends were covered with a parchment and braced by cords. A band was fastened to it and passed around the shoulders of the player so that his hands were left free to beat the drum at both ends. A second drum has been found in the excavations at Thebes in the year 1823. Explorers have been unable to find its counterpart in any paintings or sculptures that have yet been discovered. This drum is shaped much like a small barrel. It is one and a half feet high and two feet broad. It is braced with vertical cords. Carl Engel,[1] who has examined the drum, says of it: "A piece of catgut encircled each end of the drum, being wound round each cord,

1. A long drum

2. A barrel-shaped drum

1. Engel, Carl. Music of the Most Ancient Nations. p. 218-219

by means of which the cords could be tightened or slackened at pleasure, by pushing the two bands of catgut towards or from each other. It was beaten with two drumsticks slightly bent. The Egyptians had also straight drum-sticks with a handle and a knob at the end. The Berlin Museum possesses some of these."

The third drum is very similar to the modern Egyptian darabukkeh, of which there are two varieties. "One of these is the earthen darabukkeh, principally employed by the boatmen of the Nile, as an accompaniment to the zummarah, a double reed pipe, as well as by some inferior story-tellers. It is from 1 1/2 feet to two feet in length. The other is described by Lane as being made of wood, inlaid with mother-of-pearl and tortoise-shell, covered with a piece of fish's skin at the larger extremity, and open at the smaller, and about fifteen inches in length."[2]

3. A darabukkeh

As we may note from the drawing, figure 3, and from Carl Engel's description, this third kind of drum is really a form of the tambourine. It is interesting that through the ages the small hand-drum has been found a universally popular partner of the pipe[3] to accompany simple festivities.

2. Engel, Carl. Music of the Most Ancient Nations, p. 219
3. Compare the Egyptian darabukkeh and zummarah, the old English tabor and pipe, the Revolutionary and Civil War fife and drum.

Stainer calls this instrument (which Engel mentions as like the Egyptian darabukkeh) a darabooka[4] and says that our kettle-drum resembles it, except that the kettle-drum is supported on a tripod and lacks the enlarged handle of the Egyptian instrument.

The drums of the Assyrians were very similar to those of the Egyptians. Most of the Assyrian drums were covered with skin on only one side and were beaten by the hands. A tubla, probably made at least partly of metal, may have had the skin stretched over the rim and fastened by ornamented large-headed nails.[5]

The Chinese developed eight different kinds of drums. Their use of the drum will be treated under the section devoted to Chinese instruments.

Two types of tambourines were in use by the Egyptians. One is round, almost precisely like that used in Europe and the East at the present time; the other was of an oblong square shape, slightly incurved at the sides. This latter instrument sometimes had a bar across the middle, making it a double tambourine by dividing the parchment into two equal parts. For illustration, see figure 4.

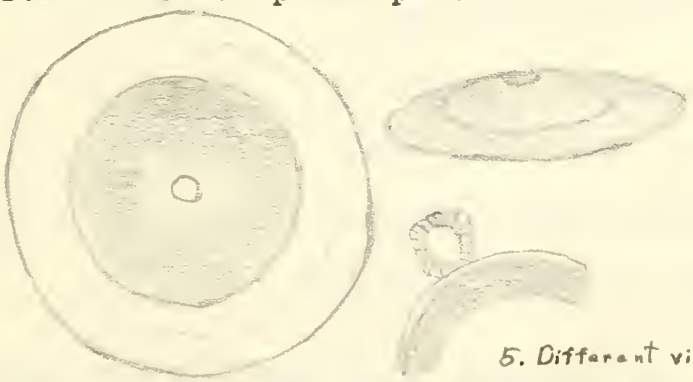
4. Double Tambourine

The modern Arabs stretch a parchment of sheepskin on a square

4. Stainer, John. Music of the Bible. p. 184
5. It is hard to make positive statements about Assyrian instruments, because the information must be gathered from basreliefs many of which are quite indistinct in outline.

frame, and place four catgut cords over the inside to increase the vibration. They call this instrument a doff. It is highly possible that this instrument is very similar to the ancient Egyptian square tambourine and to the Biblical toph.[6] However, the toph may have had a closer similarity to the Egyptian hand-drum or darabukkeh. This Hebrew toph was used on occasions of joy. In Exodus 15:20, "And Miriam, the prophetess, the sister of Aaron, took a timbrel in her hand; and all the women went out after her with timbrels and with dances." Again, in Judges 11:34, "Jephthah came to Mizpeh unto his house, and behold his daughter came out to meet him with timbrels and with dances." In our English translations we use the terms timbrels or tabret for toph.

The British Museum has two pairs of Egyptian bronze cymbals. One pair was found deposited in the coffin of the mummy of Ankhape, a sacred musician. These cymbals were shaped like our soup-plates and had a hole in the center through which a rope loop was passed for a hand-clasp.



5. Different views of the cymbal.

6. Engel, Carl. Music of the Most Ancient Nations. p. 222. Also, Stainer, John. Music of the Bible. p. 188.

The other pair is 5 1/3 inches in diameter, and the cymbals are united by a band of linen.

The Assyrians had a funnel-shaped cymbal that may have enclosed a gadget for making tones louder or softer.

The Hebrews record two instruments that were apparently cymbals--the tzeltzelim[7] and the metzilloth or the metzilthaim. Both are translated indiscriminately as cymbals in our English versions. The Hebrews had two other interesting classifications of cymbals recorded in Psalm 150:5, "Praise him upon the loud cymbals; praise him upon the high-sounding cymbals." The "loud" cymbals must surely have been of larger diameter than the "high-sounding" cymbals. The modern Arabs have a similar classification.

The flat cynbals were played by bringing them together directly in front of the body; the conical cymbals were played by holding one and bringing the other down directly on top of it, but not completely covering it as the Assyrian in figure 6 is pictured as doing, as the vibrations would soon crack the metal if two completely overlapped. The material used in these cymbals was

6. Conical Cymbals.

7. Other spellings are tseltslim, mtsiltayim. Villoteau suggests that the tzeltzelim may have been closely related to the sistrum.
See-Engel, Carl. Music of the Most Ancient Nations. p. 225.

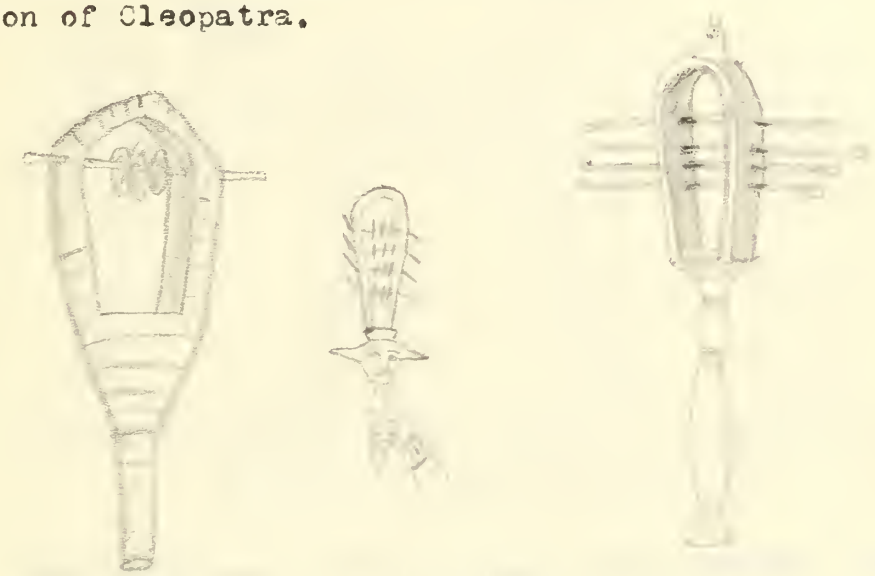
most frequently copper with an admixture of silver.

The cymbal might well be called Alice in Wonderland. Like Alice, it grew larger and larger until it suddenly found itself in a new world, suspended by a rope and struck as a gong. The Chinese made the most of the gongs, arranging them to form a scale. At the same time, the cymbal became smaller and smaller until a series of pairs found themselves encased in the rim of the tambour. Sometimes two pairs of these midgets were affixed to the thumb and forefinger of each hand and struck together. They were then called castanets. A variety of materials from chestnuts, ivory, mother-of-pearl, to bones were used for these castanets.

Before the Napoleonic expedition the sistrum was the most prominent ancient Egyptian instrument known. The sistrum has an elongated horseshoe shaped frame of metal, fastened at the open ends to a handle. Metal bars were passed through the two sides of the frame so that they made a noise when shaken. Quite often, small loose rings or bells were slipped onto these bars to increase the amount of noise. It was a glorified rattle, similar in principle to a baby rattle. The sistra ranged in size from nine to eighteen inches.[8] Stainer believes the instrument "menaaneim" mentioned in II Samuel 6:5, refers to a type of sistrum.

8. Stainer, John. Music of the Bible. p. 179

Female performers had practically the exclusive use of the sistrum. They used sistra in religious and other performances. Virgil refers to the sistrum in his Aeneid VIII, 696: "Regina in mediis patrio vocat agmina sistro", in his description of Cleopatra.



7. Sistra with and without rings.

The castanet has already been mentioned. However, there is a special form of the castanet that needs separate description. This is the rhythmical instrument, the crotola. Engel[9] describes it thus: It "consisted of two balls or knobs, sometimes made to represent human heads, probably of metal, and hallow, to which were affixed handles, either straight or slightly curved. One of these was held in each hand by the performer, and the heads were struck together to mark the time in instrumental performances or in the dance. A pencil sketch of men dancing to the rhythmical sound of crotola is

9. Engel, Carl. Music of the Most Ancient Nations.p.225.

shown in figure 8. A more simple, but similar instrument is found in the "bones" of the negroes in the southern part of the United States. "Bones" are also used by most jazz orchestras.

8. Men dancing To the cymbals

The Egyptians, the Assyrians, the Hebrews, and the Chinese had bells. Undoubtedly, the Chinese were the most ingenious in their development of the bell.[10] The bell was probably an outgrowth of the cymbal, and in its early stages was used more for its noise and ornamentation than its music.

In the Bible we find mention in Exodus 28: 33, 34 and Ecclus 45:9 of "phaamon" or small golden bells which were attached to the hem of the vestments of the priests. Bells attached to the bridles or collars of horses were in common use among the Assyrians. From this may come our custom of sleigh-bells.

10. A complete description of the use of the bell by the Chinese is given in this thesis under the section "Uses of Instruments by the Chinese."

Mr. Layard describes some bells he unearthed in the excavation at Nimroud and which are now in the British Museum: "The first objects found in this chamber were two plain copper vessels or caldrons, about two and one half feet in diameter, and three feet deep---filled with curious relics. I first took out a number of small bronze bells with iron tongues, and various small copper ornaments, some suspended to wires. With them were a quantity of tapering bronze rods, bent into a hook, and ending in a kind of lip. The caldrons contained about eighty bells. The largest are three and one fourth inches high, and two and one half inches in diameter; the smallest one and three fourths inches high and one and one fourth inch in diameter."[11]

9. Bells found at Nimroud

Above are sketches of the bells found at Nimroud. Three of these, as may be seen in the drawing, are open at the top. The clapper was probably fastened here. Bronze predominates as the material for the bells found in both the Egyptian and the Assyrian excavations.

11. Layard, A. H. Discoveries in the ruins of Nineveh and Babylon. p. 177.

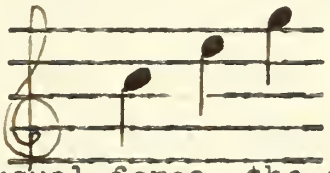
In Eastern Asia, the bell was early used for religious purposes, but around the Mediterranean this use of the bell was not appreciated until a much later date. Paulinus, Bishop of Nola in Campania about the year 400 A. D. is said to have started the use of large church bells.

B. A Tracing of the Progress of Wind Instruments.

Probably no instrument has attracted romantic fancy as much as the simple pipe. We go to the rich field of mythology for the popular story of its origin. According to myth lore, the beloved god, Pan, was chasing Syrinx, a nymph. Syrinx, seeing that she would be caught, called to the water nymphs, the Naiades, to change her into a bunch of reeds. Pan found he had a bundle of reeds in his hand instead of the fleeing Syrinx. Pan heard musical sounds as the wind whistled through the reeds. He experimented with them and finally produced the instrument which bears his name--the Pipes of Pan. It is a phenomenon that these pipes have been found among practically every primitive race. In spite of the legend, prehistoric man must have known that a tone could be made from a single pipe before he thought of binding them together.

One of the most interesting instruments excavated, and the one of most ancient origin which is capable of being played today, is a pipe of baked clay which is held by the Museum of the Royal Asiatic Society. Carl Engel gives such a [11]

11. Engel, Car. Music of the Most Ancient Nations. p. 75.

fine description of it that I quote here in full: "It is about three inches in length, and has only two finger-holes, situated side by side, and consequently equidistant from the end at which it is blown. The opposite end has no opening--the instrument in this respect resembles a whistle. If both finger-holes are closed, it produces the note C; if only one of them is closed, it produces E; and if both are open it produces G. Besides these notes, one  or two others are obtainable by some little contrivance; thus, by blowing with unusual force, the interval of a fifth, G, may be raised to that of a sixth, A. But the fixed and natural notes of the instrument are only the tonic, third and fifth. Moreover it is remarkable that the third which is obtained by closing the left finger-hole is about a quarter tone lower than the third which is obtained by closing the right finger-hole. Perhaps it was intended for the minor third. It may have been originally more flat, and might perhaps be restored to its former pitch, if it were advisable to submit the pipe to a thorough cleaning." Great care must be taken in handling the pipe as it is so fragile with age that it would break to pieces if dropped.

Reference must also be made to the Double Pipe. In the British Museum is a wall painting taken from a columbarium in the Vigna Ammendola on the Appian Way near Rome. It is a youth playing on the Double Pipes. One pipe which he holds in

his mouth appears to be slightly longer than the second. Both pipes have reeds similar in appearance to that of the oboe. We can only wonder what a raucous tone must have come out of those pipes when we know what great care must be exercised to produce a pleasing tone in our oboes and clarinets. The Greeks called the single pipe the monaulos, and the double pipe the diaulos. The Egyptians called the double pipe the mam.[12] In many of the sculptures and wall paintings, the player is shown with a leather bandage over his mouth and around his head with two holes through which the tubes could pass. This bandage was called Phorbeia and either supported the pipes to leave the player's hands free to operate the holes, or it supported his cheeks to keep them from protruding while blowing.

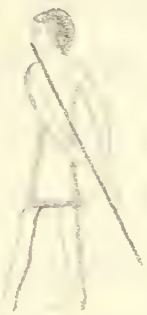
The simple pipe developed in two different directions. It remained a hollow reed or tube pierced by holes and became the flute. It inserted a reed and became an oboe (and clarinet). The first reeds in the oboe were apparently made of thick straw according to specimens that have been excavated and that are on exhibition in the British Museum. Two straws, a foot long, the same length as the pipe, were found with one pipe. Pieces of thick straw inserted into the tube in some pipes obviously served a similar purpose as the reed in our oboe and clarinet.

12. Like modern Egyptian "zummerah" M. F. Petrie found two such pipes dating 1100 B. C. See: Lynd, William. Ancient Musical Instruments. p. 23.

Records of these ancient oboes have been found in Egypt, China, India, and Greece. The Hebrews also used the instrument. Stainer is of the opinion that the khalil (or chalil) of the Bible was of the oboe family rather than the flute.[13]

The flute is generally termed the descendant of the Pandean pipes and the progenitor of the organ. The name originated from a small eel called a "fluta" which had seven round black spots on its sides.[14]

Three types of flutes came into existence.[15] First, the simple or Japanese flute, blown at the end and pierced with a few holes; second, the transverse flute, blown at a hole in the side; third, the flageolet flute, blown at the end and furnished with a diaphragm, which directs the air in a thin stream against the edge of the opening. The flue-pipes of the organ are modeled after this flute.



10. Seba, an Egyptian flute

The Egyptians had a flute of extraordinary length (see figure 10) which they called "seba", meaning the shin bone. The Romans had a flute corresponding

13. Stainer, John. Music of the Bible. p. 96.
14. Parmele, Mary Platt. Music: Its Evolutionary Development Syllabus 64 University of State of N. Y. Extension Syllabus.
15. Blatzell, W. J. History of Music. p. 149.

to this called "tibia". This was also made of the shin bone. However, most of the flutes of early construction were made of wood or reed.

These ancient nations had greater use of the flute than we do. They made flutes of all sizes to form a regular family. "A flute-concert is painted on one of the tombs in the pyramids of Gizeh and dates, according to Lepsius, from an age earlier than B. C. 2000. Eight musicians are performing on flutes. Three of them, one behind the other, are kneeling and holding their flutes in exactly the same manner. Facing these are three others, in a precisely similar position. A seventh is sitting on the ground to the left of the six, with his back turned toward them, but also in the act of blowing his flute like the others. An eighth is standing at the right side of the group with his face turned towards them, holding his flute before him with both hands, as if he were going to put it to his mouth, or had just left off playing. He is clothed, while the others have only a narrow girdle round their loins. Perhaps he is the director of this singular band, or the solo performer who is waiting for the termination of the "tutti" before renewing his part of the performance. The division of the players into two sets, facing each other, suggests the possibility that the instruments were classed somewhat like the first and second violins, or the flauto secundo of our orchestras. The occasional employment of the interval of the

third, or the fifth, as accompaniment to the melody, is not unusual even with nations less advanced in music than were the ancient Egyptians."[16]

The bag-pipe, which we usually associate with the picturesque kilt of the Scottish player, had its origin in antiquity. It was known in Egypt, Asia, and China. A representation was found in the ruins of Tarsus, Cilicia, which dated to the pre-Christian era.

It is disputed as to whether the "magrepha" was a bag-pipe, an organ, or a kettle-drum.[17] From its description of two pairs of bellows, ten holes containing ten pipes, and a tone so loud that it could be heard at an amazingly long distance, it would seem to be more like an organ. All authorities seem to agree on translating "symphonia" as a bag-pipe. The Greeks called the bag-pipe "ascaulos", meaning leathern-bottle pipe.[18]

There were two types of bag-pipes. One used the bag as a reservoir for air supplied from the mouth. The other operated a stream of air from a bellows by pressure from the arm. The Roman bag-pipe, "tibia utricularis", is said to have been a favorite instrument of the Emperor Nero.[19]

Each nation had its favorite trumpets. The Hebrews

16. Engel, Carl. Musical Instruments. p. 13
17. Ibid. p. 24
18. Stainer, John. Music of the Bible. p. 145
19. Engel, Carl. op. cit. p. 120-123

had the keren, the shophar, and the khatsotsrah; the Romans had the cornu, the tuba, the lituus, and the buccina; the Chinese, the hwangteih and the haot'ung. The shophar and the keren were both made of a ram's horn, and were much alike in shape, except that the former may have been just a little more curved than the latter. The shophar is the only Hebrew instrument that has been preserved down through the ages and that is used in Jewish synagogues today.[20] Buck, states that it is probable that in early days the chatzozerah (khatzozerah), "trumpet", was identical with the "shophar". After the Exile they became differentiated.

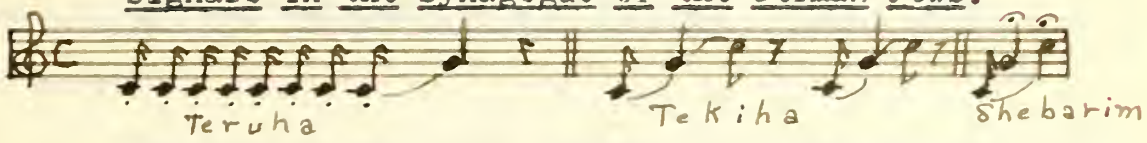
The use of a ram's horn as a trumpet comes traditionally from the story of Abraham offering up his son, Isaac, as a sacrifice. The ram's horn is used to beseech God to be as kind as he was when he placed the ram in the thicket for Abraham to replace his son Isaac.

Carl Engel, who has surely made a most careful and pain-staking study of the use of the ancient shophar in modern Jewish ceremonies says:[21] "The signals blown on the shophar are said to be the same, at least rhythmically, as those which were used more than three thousand years ago. This is the more probable because they are strictly prescribed and adhered to; they are simple, characteristic, and easily preserved

20. Buck, Percy, C. The Oxford History of Music. p. 41
21. Engel, Carl. Music of the Most Ancient Nations. p. 294

traditionally; and they are very much the same in all the synagogues----

Signals in the Synagogue of the German Jews.



In the famous Arch of Titus at Rome there are found two trumpets which were chatzozerahs. The chatzozerah is long (usually about two feet), slender, and made usually of silver or bronze. The straight trumpet of the Greeks, similar to this was called "salpinx".

The Romans had a large curved horn made of brass which resembled an embryo modern tuba. It was the cornu. The cornu consisted of a large long tube curved to make about two thirds of a circle. The player blew into the small end, while the large broad end or bell curved up over his shoulder. The Roman "tuba", on the other hand, was a long straight trumpet almost identical with the Hebrew "chatzozerah" and was used, as was the cornu, to convey war signals. The Roman "lituus" was a slender straight tube, with an enlarged end bent upwards. It resembles quite closely an inverted pistol. The "buccina" was probably made from a conch shell.[22]

C. String Instruments as Found in the National Histories.

We do not know at just what stage stringed instruments came into being. We do know that in many nations there

22. Engel, Carl. Musical Instruments. p. 35

has been found a one-stringed instrument, shaped much like the hunter's bow, about the time that wind instruments were being pierced with holes. These one-stringed instruments gradually added strings and resonance boxes to form a great variety of instruments.

The bow, in use with stringed instruments was probably an unknown thing to the Hebrews, Egyptians, and Assyrians. The strings were plucked by the hand or a plectrum of some hard material, or were struck to produce a tone. The invention of frets to shorten the strings opened a great field of tones on one string.

The chief stringed instruments of the Hebrews are: the harp, the asor, the kinnor, the guitar, the dulcimer; those of the Egyptians: the harp, the trigonon, the lyre, the tamboura, and certain peculiar stringed instruments unnamed; those of the Assyrians: the harp, the lyre and the kissar, the dulcimer, the asor, the tamboura.

Our golden harp of today, noted for its grace and beauty would not give as much competition along these lines as one might think with its ancient progenitor.

The Egyptian harps were highly ornamented and varied greatly in size, shape, and number of strings. With the smaller harps, the player either carried it, placed it on a small stand and knelt before it, or placed it on a larger stand and

stood with it.

The harps that have been found in paintings on the walls of tombs vary so surprisingly in their number of strings that we must make note of it. However, we dare not say that each harp contains the exact number of strings that were on the painter's model, for we have no proof that the painter stopped to count them as he was making his representation. Discrepancies have been found in certain drawings where the number of strings fail to correspond to the number of pegs.

The largest harp which has yet been found was about six and a half feet tall and had thirteen strings. The discovery of this harp and another of ten strings by the great traveller, Bruce, caused quite a commotion in the musical world. The two harps were painted on a fresco on the walls of a sepulchre at Thebes, supposed to be the tomb of Rameses III who reigned about 1170 B. C. These harps are most remarkable in their perfection. The frame of the thirteen-stringed harp was evidently veneered and inlaid, "probably with ivory, tortoise shell, and mother-of-pearl, the ordinary produce of the neighbouring seas and deserts."[23] Dr. Burney, whom Bruce immediately consulted on his discovery, was inclined to believe the harp was tuned by the Greek system. "The first idea that presented itself at the sight of thirteen strings was, that they would furnish all the semitones to be found in modern

23. Engel, Carl. Music of the Most Ancient Nati ns. p. 188

insturments, within the compass of an octave, as from C to c, D to d, or E to e."[24]

Engel, on the other hand, disagrees with Dr. Burney.[25] "Burney's determination of the thirteen intervals in accordance with the Greek system might be correct if the harp dated from the time of the Ptolemies; but it is a thousand years older. At that early period the pentatonic series was, as we have seen, most likely the usual one in Egypt."

In the Paris Museum there is a specimen of a recovered Egyptian harp, triangular in shape, with twenty-one strings. The strings, (not only of this one, but of all the ancient harps) could not have been tuned to any such tension as we have in our harps today because of the lack of a fore pillar in all yet discovered.

The Assyrian harp was about four feet high and was carried in front of the player. The strings were fastened at the bottom and the ends, adorned with tassels, were allowed to hang for a foot or more below the harp. The sounding board was in the upper part of the frame, and contained two hour-glass shaped sounding holes. In the Assyrian harp it is again hard to estimate the number of strings because the sculptors were careless in making the number of strings correspond with the number of pegs.

The Greeks evidently had no harp of their own. The lyre was a much more common instrument. The only example of

24. Burney, C. General History of Music. p. 216 Vol. 1.
25. Engel, Carl. op. cit. p. 192

11. The ten-stringed harp at Thebes

a Greek harp is found in the picture of a Muse with a harp, playing with two others with lyres, on a vase which is now held by the Munich Museum. The harp is quite pronouncedly Assyrian in shape and construction. Probably the harps of Greece were borrowed from Asia. The Egyptian name of the harp was "beni" or "buni".

The kinnor is the "man without a country" of the Hebrew instruments. It has wandered back and forth from the harp family, to the guitar, to the lyre as various authorities made their investigations. At present there seems to be a consensus of opinion that the kinnor was a type of lyre. Engel[26] gives the following reasons for supporting this belief: "The lyre was evidently an universally-known and favoured instrument among ancient Eastern nations. Being much more simple in construction than most other stringed instruments, it undoubtedly preceded them in antiquity. The kinnor is mentioned in the Bible as the oldest stringed instrument, and as the invention of Jubal. Even if the name of one particular stringed instrument is here used for stringed instruments in general, which may possibly be the case, it is only reasonable to suppose that the oldest and most universally-known stringed instrument would be mentioned as a representative of the whole class rather than any other. Besides the kinnor was a light and very portable instrument: King David, according to the Rabbinic

26. Engel, Carl. Music of the Most Ancient Nations. p. 310

records, used to suspend it during thenight over his pillow. All its uses mentioned in the Bible are especially applicable to the lyre." To this might be added a personal observation that the passage in Psalms, "By the rivers of Babylon, there we sat down, yea, we wept, when we remembered Zion. Upon the willows in the midst thereof we hanged our harps" is much more reasonable if the kinnor is translated as lyre. It might be difficult to hang a heavier instrument on a willow.

If it could be proven definitely that the figures found by Sir Gardner Wilkinson[27] in a tomb at Beni Hassen are really a portrayal of the brethren of Joseph arriving in Egypt, as the discoverer believes, the question would be settled at once, for one of the figures carries a rude lyre, and it was the kinnor which was hung on the trees of Babylon.

Another argument is that kinnor has a close resemblence in spelling to kissar, and Egyptian lyre. However, we must rule out this point as it is a dangerous thing to attempt to define an instrument by association of names.[28]

The Greeks have a mythological tradition that one of their Gods, Mercury, was walking along the sea shore one day and chanced to hear the wind make a sound on the dried fibres of a tortoise shell. He picked it up and found it made a tone when plucked. From this finally developed the lyre.

27. Wilkinson, Sir Gardner. Manners and Customs of the Ancient Egyptians. p. 296
28. e. g. compare the names "tamboura" and "tambourine".

Most of our information about lyres must come from paintings and sculpturings because of the scarcity of actual specimens. However, the British Museum holds a lyre which was found in a tomb near Athens. The two side pieces are of sycamore and are about eighteen inches in length; the cross-bar is about nine inches. It is so dilapidated that further knowledge can not be gained about it.

The Greeks, Romans, and Etruscans especially favored the lyre. Just why, we do not know.

The traditional lyre of Apollo was simple in construction, and had four strings. This form held for centuries. In 676 B. C., in a musical contest at Sparta at the feast of Apollo, Terpander won the prize with his lyre of four strings.[29] It was Terpander who later increased the number of strings to seven. "Cleonidas in the Introduction to Music (ascribed to Euclid), has preserved for us two lines from a poem by Terpander himself, which Mr. Wm. Chappell translates as follows:--

'But we loving no more the tetrachordal chant
Will sing aloud new hymns to a seven-toned lyre.'

"Sappho used a lyre of six strings, Pythagorus added a ninth, Anacreon a tenth, his lyre was supposed to be a Lydian 'magadis', capable of so dividing the string in playing that by an intermediate bar, against which each string could be pressed, octave sounds could be given; then we hear of

29. Smith, Hermann. World's Earliest Music. p. 311-312

Timotheus (the younger) in B. C. 446 adding four strings to the Spartan lyre, an audacity which was so great an affront that the Spartan Ephori cut away the four strings, confiscated the lyre and suspended it in the temple as a warning to all innovators, and there it was to be seen by citizens and by travellers in the round building known as the Skeias."[30]

Chappell recounts another interesting myth of Terpander and the lyre. "Hermes gave his lyre to Orpheus, and instructed him in its use. After Orpheus had taught Thamyris and Linus (the latter of whom had taught Hercules and Amphion), Orpheus, motally wounded by the women of Thrace, threw his famous lyre into the sea. Thence it was afterwards discovered by fishermen, who took it to Terpander, and Terpander took this exquisitely-worked instrument to the Egyptian priests, and declared himself to have been the inventor. There is a sufficiently fatal objection to the Terpander lyre-story, in the fact that the Egyptians had the same musical instrument, and with seventeen strings instead of seven, nine hundred years before Terpander's supposed visit."[31]

The trigonon was a simple stringed instrument of three sides, much like the lyre in principle. Probably the characteristic trigonon had the third side formed by the longest string as illustrations in tombs at Thebes and Dekkeh show.

30. Smith, Hermann. loc. cit.
31. Chappell, William. History of Music. p. 49

The third bar was added to resist the tension of the strings.

The trigonon was held in front of the player. The strigns were struck by a plectrum held in the right hand of the player. The left hand was used to muffle the strings and stop the vibration when the tone was discontinued. The Romans had a trigonum, a copy of Egyptian trigonon.

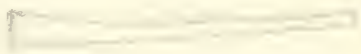
Because of the confusion of the authorities over the possibility of an early dulcimer, only a short passage of this thesis shall be devoted to this instrument. Further excavations may bring a light on the question. The "kin" of the Chinese bears a resemblance to the dulcimer, but the strings are twanged rather than struck with hammers or sticks. The Assyrian carving Carl Engel and John Stainer believes is a dulcimer is declared by Francis W. Galpin to be "in reality a triangular harp of the kind already described, but improved by a recent European restorer in his attempt to mend the cracked condition of the ancient slab on which it appears."[32] In the Book of Daniel 3:5, the dulcimer is mentioned among six instruments used in Babylonian idol-worship. However, we do not know just how much knowledge the translator had in interpreting this instrument as a dulcimer.

The nebel was a stringed instrument either somewhat

32. See Galpin's (Francis W.) supplementary notes to Stainer, John. Music of the Bible, p. 46

12. Harp. Tambour, and double pipe

13. An Egyptian instrument with five strings



14. An Assyrian trumpet

15. Common Egyptian trumpet

16. A trigonon

17. Another trigonon

larger than the kinnor or a type of guitar. It was played with a plectrum and often had as many as ten strings. The Asor was probably a variation of the nebel, signifying a nebel with ten strings. In the Bible we usually find the nebel mentioned in connection with other instruments. This may mean it was an accompanying instrument; however, in Amos 5:23, it speaks of the melody of the nebels.

The tamboura is a stringed instrument, played with a plectrum, and possessing a neck of extraordinary length. Three representations of the Assyrian tamboura have been found. One is a carving on a monument showing a man playing the instrument, although no tuning pegs or strings are shown. There are two ornamental tassels hanging off of the end of the neck which may mean that the instrument had two strings.

Two small baked-clay images holding the instrument have also been found, but they, too, lack strings and tuning apparatus.

In Egyptian hieroglyphs, the figure of a tamboura meant "good". A drawing of a house with a tamboura in brackets over the doorway signified "a good abode".

D. The Organ, the Most Unique Instrument of Early Records.

The development of the organ has covered almost two thousand years from its earliest form to its present state. As the number of pipes in the Pan's Pipes or the Syrinx increased,

it became most difficult to move the head rapidly from one pipe to the next. A device was put into practice which placed the pipes in a box or wind-chest into which the player blew through a tube. He closed with his hands all the pipes he did not wish to sound.

As the pipes continued to increase, one pair of lungs failed to produce enough wind, so mechanical devices were used to produce the wind and wooden slides were made to open and close the pipes. Even thus, it was impossible to produce any but jerky tones as there was no reservoir to feed air while the bellows were being filled again.

One of the most interesting instruments of the ancient nations was the water-organ or hydraulic-organ.[33] Vitruvius gave a detailed account of the construction of this instrument, but until the rather recent discovery of a perfect little clay model about seven inches high found in the ruins of Carthage, it was hard to really understand the working principles of the organ.

Ctesibius is generally ascribed as the inventor of the water-organ of the third century B. C. Buck gives an interesting story of how Ctesibius came to make the so-called water-organ. "He wanted to hang a barber's mirror so that it would stay at the right height; he hung it on a cord which went over a pulley in the middle of the ceiling and over another in the

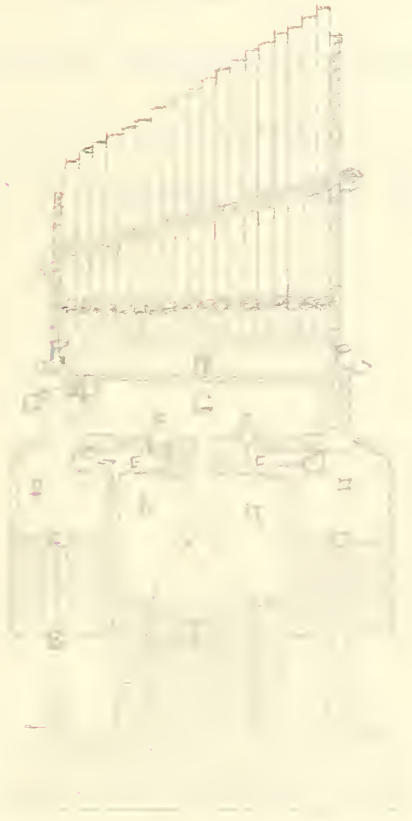
33. See Chappell, Wm. History of Music. p. 351-359 for the account of Vitruvius in Latin with the English translation added.

corner of the room, and down into a tube where it carried a counterpoising weight; when this counterpoise went down the tube, it drove the air out and thus produced a note."[34]

Francis W. Galpin has made a careful study of the model and the treatises of Vitruvius and Hero, and from these presents the probable mechanism and the way in which it worked. "On either side of the organ are two barrel-shaped air pumps (a) fitted with a plunger (b) and an intake valve (c). (See accompanying drawing). These pumps, raised alternately by levers, each with a long handle centred at (d), force air through the pipe (e) and the valve (f) into the wooden wind-chest (g); finding no outlet owing to the closing of the valves, the air passes down the tube (h) into a metal retainer (j), funnel-shaped and raised on short feet. This retainer stands in water which is contained in the cistern (k), and as the air enters from the wind-chest the water is forced out and rises in the cistern: thus, owing to the displacement of the water, the air both in the retainer and in the wind-chest above is subject to heavy pressure.

"On the upper side of the top board of the wind-chest three channels (n) are cut, each communicating at one end with the interior of the chest by means of a hole, closed by a cylindrical tap-shaped stop (m), which when turned admits the air to the channel above. Covering the whole length of these air-

34. Buck, Percy C. The Oxford History of Music. Introductory Volume. p. 26



18. Water-organ

channels is a double board (o)--divided into lower and upper boards--between which slide small slips of metal (p) pierced with holes to correspond with air holes in the boards, each being furnished with a stop-block (q). The compass of the key-board of the Carthage Hydraulus (120 A. D.) was nineteen notes, which, according to the scales used by the water-organists, comprised the following (beginning from Bass G): G, A, B flat, B natural, C. D. E flat, E natural, F, F sharp, G, G sharp, A, B flat, B natural, C, C sharp, D, and E."[35]

35. Galpin, F. W. The Water-Organ of the Ancients. English Music. p. 362-368

PART TWO

The Development of Instruments According to National Boundaries.

A. The Musical Instruments of the Egyptians.

One of the greatest losses to history was the burning of the immense Alexandrian library, destroying 495,000 works of the various ancient countries. We can only wonder how many difficulties in instrumental history would have been cleared up if we could resort to the literature of the time. We can only be thankful that the Egyptians believed the collection of all the dead person's earthly treasures was necessary for his immortal life, for now we can delve into the tombs, pyramids, and buried cities for a rich source of information.

Pratt[1] says "It is evident that from early times the ancient Egyptians were extremely fond of music, especially as a social diversion, as a courtly luxury, and a religious ceremony. It was united with poetry and with many sorts of dances. Professional singers, players, and dancers were common and carefully trained. Among court-officials musicians are often named as prominent. It is probable that the cultivation of music was one of the many functions of the priesthood."

The Egyptians considered their religious melodies sacred and would not change them. Plato praised the Egyptians "for their ability to create melodies which had the power to

1. Pratt, Waldo Selden. The History of Music. p. 46

subdue the passions of man and purify his spirit. 'This certainly must be the work of God or of a godly man.' "[2]

The Egyptians had harps (beni) of all descriptions varying from four feet to over six feet and highly decorated. We have already discussed elsewhere in this thesis the beautiful specimens found in the wall paintings at Thebes; the famous harp of ten strings is shown in the drawing on the following page. The Egyptians also had lyres, some of which they held horizontally, some perpendicularly, and one which was six feet high.

They had many varieties of the trigonon without the front bar of the triangle; theyhad the tamboura or nofre; they had a long four-stringed instrument of the harp family which was placed on the shoulder while playing and another peculiar instrument of five strings.

Among the wind instruments the Egyptians had a single pipe, sometimes with long straws inside; the double pipe or mam (which, unlike the single pipe and the flute, had female players as well as men); the flute, originally called sebi, now called nay, sometimes double and sometimes played with the nose; two types of trumpets, one of brass and one probably of wood to produce a soft tone.

As the instruments of percussion, the Egyptians had three kinds of drums--one a long drum, beaten by the hands;

2. Idlesohn, A. Z. Jewish Music. p. 5

the second of the shape of a small barrel, beaten by drumsticks, the third like the darabukkeh of modern Egypt; three kinds of tambourines--one round, one square, and one oblong divided by a bar across the middle to make a double tambourine; sistra or seshesh; two types of peculiar persussion instruments that were probably a gong and a bell; crotola; cymbals; and simple and highly ornamented bells.

B. The Musical Instruments of the Assyrians.

From the bas-reliefs found in excavations at Nimroud and Kouyunjik comes our knowledge of Assyrian instruments. Since these bas-reliefs represent on the most part historical events, religious ceremonies, and royal entertainments, it is natural to infer that only those instruments are shown which were used on those state occasions. It may be that many other instruments were in use by the Assyrians about which we do not know.

Most of these bas-reliefs were colored originally, the colors used being red, blue, black and white. Unfortunately, the colors are worn off and faded.

At Kouyunjik was found a slab depicting a king and queen at a banquet. Two musicians, one a eunuch playing a harp, the other a man beating a drum with his hands, face the king.

Another slab depicts a religious ceremony--probably

a sacrifice--with three musicians performing. One plays a lyre with five strings, another a harp, and the third musician is probably on a slab which joined this one, as only his double-pipe shows.

Several bas-reliefs found at both Nimroud and Kouyunjik depict a king returning from battle or the hunt to the accompaniment of asors.

At Nimroud is a slab showing four bearded men crossing a mountainous country. Three are playing upon lyres, and the fourth follows carrying a stick with a knob on top.

From Kouyunjik came two slabs showing the removal of colossal bulls to the palace. In each bas-relief, two trumpeters are shown assisting in giving commands to distant workers.

Two mummers dancing to the music of a man playing a tamboura are shown in a bas-relief found at Nimroud. One of the mummers cracks a whip, evidently for rhythmical purposes.

A great assemblage of musicians is shown on a bas-relief taken from Kouyunjik. The first musician marches at the head of the procession, playing a harp. Four men follow, one with the instrument we have discussed before that has commonly been called a dulcimer, another with a double-pipe, and two with harps. Six women come next, four playing harps, one blowing a double-pipe, and one beating a hand-drum. Behind follows a chorus of singers.

Among the Assyrians, stringed instruments predomi-

nated. The asor, the harp, and the lyre were the most popular and their popularity followed that order. Only small percussion instruments were used, and the quite sparingly.

The various instruments that are thus far known to have been in use by the Assyrians are: the harp; the lyre; some kind of an instrument translated a dulcimer; the asor, the tamboura, the single and double pipe, the trumpet, the tambourine, small drums, two kinds of cymbals; bells.

C. Hebrew Instruments of Biblical Times.

Our principle knowledge of Hebrew music comes to us from the Old Testament, which, unfortunately, gives us little more than the names of the instruments. We can readily understand why there has been no other lasting record when we consider that Jerusalem was seized and plundered seventeen times and also that, for centuries, the Jews really had no home. They were four centuries in Egypt, part of that time held as captives; they spent many years in the wilderness; when they finally established their nation, they were in a state of almost constant warfare with their pugnacious neighbors. In consideration of all this it seems most natural to assume that the instruments and notation of the Hebrews were highly determined by the nations with whom they came in contact. The great contribution of the Hebrews seems to be that they gave music a definite and distinct religious imprint.

Even though we have no exact pictorial representations of the instruments used by the Hebrews, yet we can judge fairly accurately the type of instrument by its name, use, and by similar instruments in use by the Egyptians and Assyrians.

Consideration must also be given to the Arch of Titus at Rome which, in commemoration of the conquest of Jerusalem, depicts, among other things, certain Hebrew instruments. However, we do not know just how trustworthy was the knowledge of the sculptor of Hebrew instruments; moreover, the Arch was carved almost a thousand years after the time of David and Solomon.

Johann Forkel[3] finds the Rabbins record thirty-six different musical instruments in use at the time of David and Solomon, although the Bible does not mention that many.

We find the shophar, the kinnor, and the nebel mentioned most frequently in the Bible. Other instruments named are the asor (which may have been a nebel-asor), ugab, the chatzozerah,[4] the chalil, the keren (which may have been identical with the shophar), the nekeb, the toph, the tzeltzelim, or metzilloth, the menaaneim, the shalishim, the minnim, and four that are mentioned only in Daniel--the sabeka, the psanterin, the sumphonia, and the mishrokitha.

Of these, the shalishim, the minnim, the sabeka, the psanterin, and the mishrokitha were not described in Part One

3. Forkel, Johann Nicolaus. Allgemeine Geschichte der Musik. Vol. I. p. 130-139

4. See the hymn "O Day of Rest and Gladness," "[illegible]," the silver trumpet calls."
Also Gen 4, 21

of this thesis. Engel[4] defines the first two of this group thus: "Shalishim is supposed to denote a triangle. Minnim appears more likely to imply stringed instruments in general than any particular instrument." Of the sabeka we know little. It is mentioned but four times in the Bible and those appearances come in the third book of Daniel. In all four references it appears only in conjunction with other instruments. In the King James version it is spelled "sackbut", a translation which Dr. Stainer[5] much laments, as it leads to the erroneous impression that it was a wind-instrument, possibly like the trombone. The instrument is most likely a triangular harp.

Although instruments were used in the civil life of the Hebrews, their greatest importance is found in the religious ceremony. Even here, instruments held a secondary position as compared with the voice parts; they were used primarily to give emphasis to the vocal scores.

We do not know the exact method used in the synagogues in conducting services, yet, as we study the Old Testament, especially the Book of Psalms[6] with the marginal musical directions and the Selahs, we are led to certain conclusions. Four different groups participated in the services: the priests; the Levitical orchestra; the choir composed of Levites, boys, and

4. Engel, Carl. Music of Most Ancient Nations. p. 286
5. Stainer, John. Music of the Bible. p. 48-49
6. Old Testament. For specific instances, see Psalms 54,67,76, 84,88,150.

and possibly women;[7] who gave the ordinary and antiphonal singing; and the congregation which gave the amen and the responses. The pipes and stringed instruments strengthened the voice parts, the percussion kept the rhythm, and the trumpets furnished the flourishes of the interludes. The "harps" were set an octave lower than the psalteries,[8] which would mean that the strings would be longer.

The music was solemn and grave. The harps were to "take the lead".[9] The head of the "harpers" would therefore seem to have had the direction of the orchestra. The pastoral pipe, or reed-flute,[10] was used in the second Temple when the Psalms of praise, 113, 118, called the "Hallel", were sung at the Passover and other festivals. The pipe mentioned in Isaiah 30:29 and I Kings 1:40 was not used in the Temple, but in processions. The trumpet was used by the priests and heralds, especially in the "selah".

Idlesohn[11] has the following to say on the Temple Orchestra: "The Mishna gives the number of the instruments employed in the Temple as follows:

Nevel, minimum two, maximum six.

7. Old Testament. I Chron. 25:5, 6. Idlesohn does not believe women participated in the temple service.
8. I Chronicles 15:21, Psalms 6. To the Sheminethan octave lower.
9. I Chronicles 15:21
10. Translated "organ" in Gen. 4:21; Job. 21:12; 30:31; Psalm 150:4
11. Idlesohn, A. Z. Jewish Music. p. 16

Kinnor, minimum nine, maximum limitless.

Cymbal, only one.

Halil, minimum two, maximum twelve.

Thus the total minimum number required for the orchestra was twelve instruments, to which number two Halilim were added on twelve festal days during the year."

The Psalms are punctuated with musical directions or titles. As a prefix to fifty-five psalms there is found the title "To" or "For the chief musician". Other titles referring to musical instruments are; "on Neginoth"[12], meaning on stringed instruments; "upon Neginah"[13], on a stringed instrument; "upon Nehiloth"[14], on wind instruments, probably flutes; "upon Alamoth"[15], probably in the manner of maidens, soprano; "upon Sheminith" and "set to the sheminith"[16], refers to the eighth, meaning an octave lower, or to the name of a scale or tune, or to the number of strings on the instrument; "upon Gittith"[17], may refer either to the instrument or the melody; "to Jeduthun" and "After the manner of Jeduthun"[18], David's chief musician.[19]

We find the Psalms interspersed with the "selahs". Much speculation has arisen as to the interpretation of this word.[20] Stainer has grouped the various interpretations thus:

12. Psalms 4, 6, 54, 67, 76
13. Psalms 61
14. Psalms 5
15. Psalms 46
16. Psalms 6, 12; I Chron. 15:19-21
17. Psalms 8, 81, 84
18. Psalms 62, 77
19. Concise Bible Dictionary. Psalms. p. 106
20. Stainer, John. Music of the Bible. p. 82

"The term Selah which occurs three times in the Book of Habakkuk, and no less than seventy-one times in the Psalms, has been variously interpreted as indicating (1) a pause; (2) a repetition (like Da Capo); (3) the end of a strophe; (4) a playing with full power (fortissimo); (5) a bending of the body, an obeisance; (6) a short recurring symphony (a ritornello). Of all these the last seems the most probable. The fact that twenty-eight of the thirty-nine Psalms in which this word occurs have musical superscriptions seems to compel belief that it was a direction to the musical performers."[21] Francis Galpin in his supplementary notes to the book by John Stainer, quotes Rev. E. Capel Cure on his interpretation of selah. "Selah then is always a musical interlude, but not always what is known to modern critics as 'pure music'. Where it separate stanzas, it may be mere sound appealing by the beauty of its melody or combination of instruments; more ofter it represents what we now call 'programme music'; and is consciously and deliberately descriptive of the text which it accompanies." Rev. Cure cites several types of selah--the Flight, Storm, Death, Sacrifice, and War Selahs.

In civil life, the Hebrews used instruments for all festivals and occasions of joy. The women of a household frequently met their returning warriors with welcoming music and dance.[22] Jephthah's daughter came forth with a toph in her hand.

21. Stainer, John. Music of the Bible. p. 91-94
22. Judges 11:34

When David returned from the slaughter of the Philistine, the women "came out of all the cities of Israel, singing and dancing, to meet King Saul, with timbrels (toph), with joy, and with instruments of music."[23] The prophets carried a toph when Saul met them.[24]

D. The Use of Instruments by the Greeks.

Although the Greeks had the most highly developed system of music of the ancient nations, yet instrumental music was, with them, secondary to the voice, and was more often used as an accompaniment to the latter than as a solo performance.

The flute was popular with both the Greeks and the Romans. This was a reed instrument resembling an oboe, having a double reed.[25] Fitzgibbon gives a long list of occasions when the flute was used. "Flutes accompanied the chariot race in the Olympic games; the Etruscans boxed to the sound of flutes; Roman orators were wont to station flute-players behind them, so that when they raised their voices to too high a pitch the flute might sound a lower note. Flutes were played at death-beds, hence the saying, Jam licet ad tibicenes mittas: 'Now you may send for the flute-players', when one was about to die. Tibicenes were also employed on vessels to cheer the rowers and to mark the time."

23. I Sam. 18:6
24. I. Sam. 10:5
25. Fitzgibbon, H. M. Story of the Flute. p. 10-12

There was much rivalry in the flute contests among the various sections of Greece. When Thebes was destroyed, the citizens were most anxious to recover a statue of Mercury which bore the inscription: "Greece has declared that Thebes wins the prize upon the flute". At Aristotle's time it was considered a disgrace to a gentleman not to be able to play a flute. Plato, Aristotle, and Plutarch credits Olympus, a Phrygian poet and composer of the seventh century B. C. with the introduction of the instrument into Greece from Asia.

Other wind instruments besides the flutes, or auloi, the Greeks used were the Libyan flute which was played sideways, the Elymos, and the Syrinx or Pan's Pipes. Sapinx, straight trumpets, and keras, crooked horns, were used on military and priestly occasions.

Among the string instruments, the lyre with its variations held first place. It vied with the aulos or flute for popularity. The National Society of Music[26] records an interesting myth on a controversy regarding the respective merits of wind and string instruments. "Marsyas, a Phrygian satyr, found upon the banks of a stream a flute, probably the double flute, which Athena had thrown away because she feared that blowing upon it would injure her beauty. Being a satyr, and therefore not so sensitive upon the point of personal attractions as the goddess, Marysas set himself to learn the use of the instrument, and, in the course of time, grew so proficient

26. Mason, Daniel Gregory. Art of Music. Vol. 1. p. 121-122

that he challenged Apollo to a contest, the God to use the lyre, the satyr the pipe, Apollo played a simple melody, but Marsyas, following, executed a number of variations upon this tune which compelled the judge to admit that in the first test victory belonged to the satyr. Apollo then played again, accompanying himself with the voice, and this Marsyas could not surpass; he objected, however, on the ground that the voice and the lyre were two different instruments, while he was using only one. Apollo retorted that Marysas used both mouth and fingers for his pipe, hence he had the right to use his mouth as well. The judges agreed with Apollo and the second test was awarded to the god. But when the third test came Apollo scorned to use the voice, and burst out in such a strain of melody as even Mount Olympus had never heard before, the music of the immortals which no satyr could hope to compass. Marsyas was flayed alive by Apollo as a sufficient declaration of his defeat. Thus the myth. It has its reflection in fact. For the ancient national music of the lyre prevailed in Greece over the foreign Phrygian double flute."

Another instrument used by the Greeks, much like the lyre, was the kithara. The lyre had an arched sound-box, while the kithara had a flat sound-box and a larger body. The kithara became the instrument used for professional playing, while the lyre was relegated to domestic use and amateurs.

Other string instruments were the twenty-stringed mag-

adis, the barbiton, the pectis, the simikion, the pandura, and a monochord with one string stretched over a sound-box and a movable bridge.

Just how much the Greeks relied on the Egyptians in the construction of their instruments we can not say. Mush stress has been placed on the fact that Pythagoras (571-497 B. C.) studied music in Egypt. However, most of the famous Greek musicians were from Asia Minor. Marsyas came from Phrygia, Olympus from Mysias, Terpander, Arion, and Sappho from Lesbos. Another point that would give doubt to the theory that the Greeks inherited their music from Egypt is the fact that Egypt has not the graceful Greek lyre and Greece has not the heavy Egyptian harp, the favorite instruments of the respective countries.

E. Instruments as Employed by the Chinese.

Chinese records of the use of music dates back farther than any other country except Egypt. Chinese mythology and traditional history tell us that the Emperor Chi-hoang-che of the "spiritual dynasty" invented the rules of pronunciation, the written characters of the Chinese language, and music. Kai-tien-che, a later emperor of this same dynasty, invented eight kinds of instruments, naming them after accompanying songs. They were:

1. Love the people.
2. The black bird.

3. Don't cut the trees.

4. Cultivate the eight different grains.

5. Chant the celestial doctrines.

6. Celebrate the merits of the sovereign.

7. Imitate the virtues of the earth.

8. Recall the memory of all existing things.

The historical records of Chinese music date back to 2950 B. C., to the reign of Fo-hi, the first of the Ty dynasty and the founder of the Chinese Empire. Some writers have tried to link his name with the Noah of the Bible. He tried to improve music along with other phases of his Empire.

The next emperor, Chin-neung, seemed to have been a skilled player on the "Che" or "Wonderful" which was a twenty-five stringed instrument. Elson[27] relates an interesting tradition of a musical research expert, Ling-lun appointed by the emperor, Hoang-ti, reigning around 2,600 B. C., The Chinese sought to make music the foundation of all the other sciences, and the emperor gave Ling-lun the task of formulating the laws of music. "He traveled to the north-western part of China and took up his abode on a high mountain, near which was a large growth of bamboos. Ling-lun took a bamboo, which he cut between two knots; he removed the pith, and blowing in the tube, a sound resulted which was of the exact pitch of the human voice when in its normal state. Not far off was the source of the Hoang-ho, and Ling-lun found that the tone of his tube was

27. Elson, Louis E. Curiosities of Music. p. 118-120

similar to the sound given by the waters of the river in bubbling from the earth; thus was discovered the first Lu (or li), the fundamental tone.

Ling-lun was pursuing his investigations further, when the Foang-hoang appeared with its mate and perched upon a neighboring tree. The male bird sang in six different tones, while the female also used six, but different from the preceding. The first note of the mystical Foang-hoang was precisely in unison with the reed which Ling-lun had cut from the bamboo. On ascertaining this, the fable continues, Ling-lun cut twelve pieces of bamboo and pitched them according to the notes of the two songsters; he found then, by alternating the sounds of the mate with the female bird, that he had a chromatic scale. The six notes of the male were called the li-yang (masculine tones), the other six li-yn (feminine tones), and throughout all Chinese music, the distinction between the male and female tones of the scale still exists. This was the first Chinese discovery of the proportions of sound. Ling-lun went back to the emperor's court and there measured and fixed the pitch of the Chinese scale forever. Bells were also made of the official pitch, that it might easily be perpetuated."

Records of immense trumpets that sounded like the roar of dragons, and drums that gave out "thunder" are ascribed to this dynasty.

The division of time by musical instruments is ascrib-

ed to the reign of the next emperor, Chao-hao. The sections of the night were marked by strokes on a drum, and a set of twelve copper bells represented the twelve months of the year.

The succeeding emperor, Yu, inaugurated the ingenious method of placing five percussion instruments outside his palace gate for persons desiring audience to inform him of their mission. For instance, a person wishing to complain of an injustice struck a large bell; if he came on private or confidential business, he struck a small bell; if it was a matter of the empire, a drum; of a public or private misfortune, a tam-tam; if an appeal on a crime case to the emperor from a lower court, a tambourine.

The philosophers and literary men of China often devoted themselves to music. Confucius was a noted lover of music and was a skilled performer on the musical stones of the king. Even when reduced to poverty, he retained his love of singing and playing. When reproached for playing while others were starving, Confucius replied, "the wise man seeks by music, to strengthen the weakness of his soul, the thoughtless one uses it to stifle his fears."

In 245 B. C., Tchi-chi-hoang-ti, noted for building the great Chinese Wall, wished to destroy all signs of the accomplishments of past emperors, so that they would not overshadow his own. He ordered music as well as the great literary works destroyed. He had the bells which were used to denote

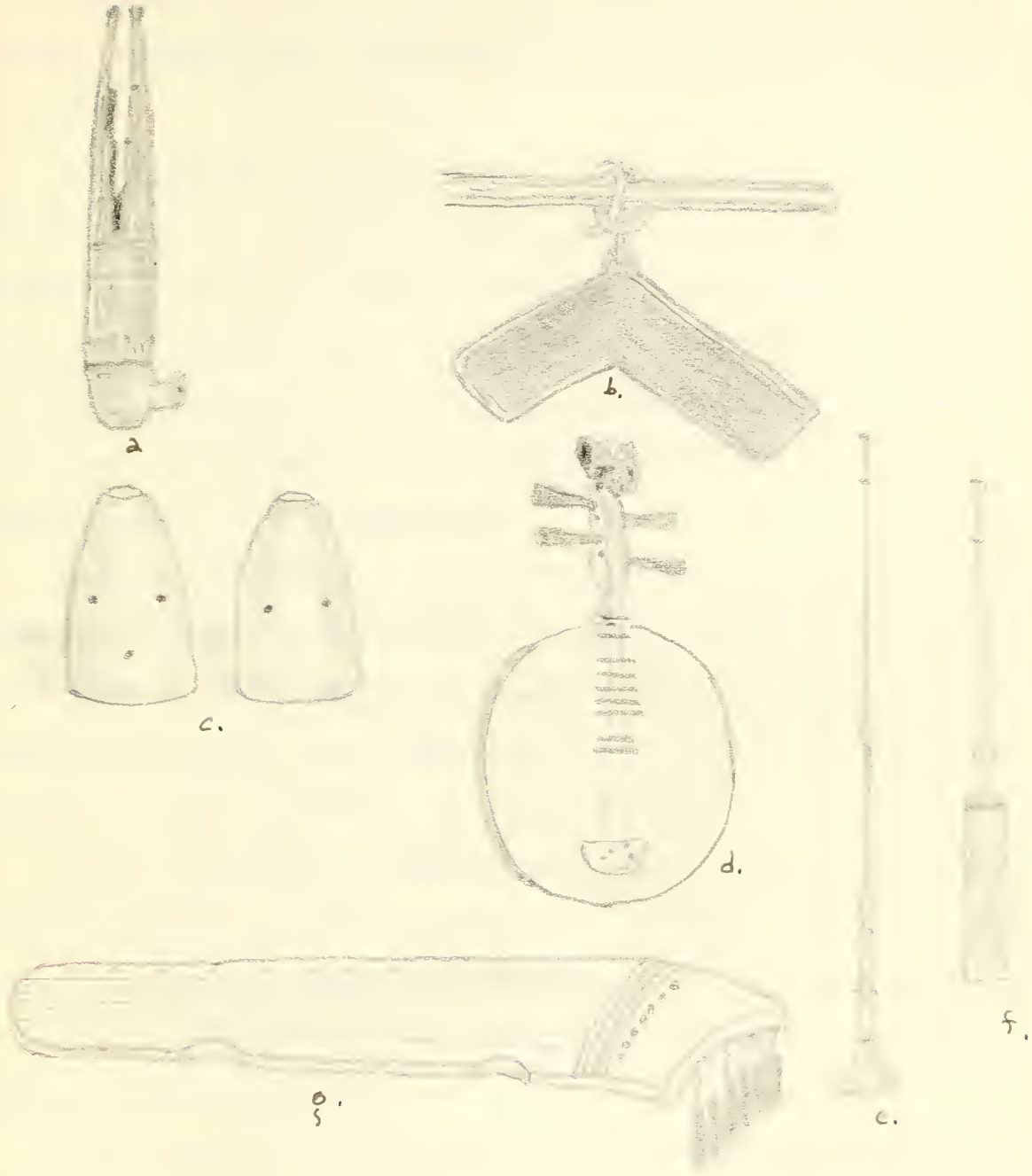
pitch melted down and used for statues. Many instruments were hidden by burial or other means to prevent destruction.

The next emperor, Kao (140 B. C.) sought to regain the old art of music, and established a new musical system, but something had been lost that could not be regained.

The Chinese classify their instruments according to the material used. They believe that nature gave them eight sound-producing materials. The materials and all the instruments are:

1. Skin was used for all kinds of tambourines and drums in all sizes and shapes. The po-fu was a small drum with parchment, which had been boiled in water, fastened at each end. The tone was mellowed by partially filling the inside with a preparation made from the husk of rice. The chin-ku, the lei-ku, the ying-ku are larger drums placed on a pedestal and decorated with symbolical designs.

2. Stone lent itself to the most valuable Chinese instruments. The ch'ing was used to accompany sacred songs 2200 years B. C. It was also used for the emperor's sunrise musical concert. The most precious stone chosen for this instrument is the "yu", a jade stone, a species of agate, found in mountain streams. Bordering nations often had to pay their bounty to the Empire in this rare stone in order to have sufficient supply for instruments. The yu was especially valued for its extraordinary ability to retain its pitch.



a. Cheng
b. Stone Chime
c. Hsüan
d. Yuekin
e. Hwangtein
f. Haot'ung
g. Ch'in or Kin

19. Chinese instruments

The ch'ing was often cut in shapes representing animals, fish, birds, etc. These plates of jade, often graduated for various pitches, were suspended from a frame and struck by a mallet.

3. Metal was used for bells, gongs, cymbals, and trumpets. The Chinese bell is called chung. These bells were made of a mixture of one part of tin to six parts of copper. The t'e-chung was a square-shaped bell, used to indicate the time and divisions in musical performances. Sixteen of these bells were sometimes graduated and arranged together to form the musical scale of the pien-chung.

Another development of the chung was the hsuan-chung dating back to the time of Confucius. It was ornamented with symbolical figures, referring to the seasons and the mysteries of the Buddhist religion. Its size ranged to about twenty inches in length. It was sounded by a wooden mallet.

Bells with wooden clappers were early used to call the people together to issue an imperial command. Confucius once made the statement that "he wished to be 'a wooden-tongued bell of Heaven', i.e. a herald of heaven to proclaim the divine purposes to the multitude."[28]

The trumpets of the Chinese were on a sliding tube system, the hwangteih being in three parts, and the haot'ung in two. The haot'ung gives a grave wailing note and is used for funerals; the hwangteih is used for both funerals and weddings.

28. Engel, Carl. Musical Instruments. p. 40

See the sketches of Chinese Instruments in this thesis for drawings of these instruments.

4. Clay was used in making ocarinas and other whistle instruments. The Chinese had an ancient whistle, existing before 2637 B. C., with five or more openings, called the Hiuen. "An ancient Chinese Dictionary speaks of the two varieties of these, saying, "the larger hiuen should be of the size of a goose egg, the smaller of that of a hen."[29]

5. Silk was used in strings for all stringed instruments. The favorite stringed instrument of the Chinese Empire was the "kin". The larger kins were five feet six inches in length, and were tuned thus: do, re, fa, sol, la, do, re. A sketch of the kin will be found in the drawings of Chinese instruments in this thesis.

Another larger instrument was the "che", which was often nine feet long and had from twenty-five to fifty strings. "The kin represented life, the che death, and before performing upon either, the player went through certain ceremonies to fit himself for the task, and lighted some perfumed tapers, which were kept burning throughout the performance."[30]

6. Wood was used in the percussion instruments of the Chinese four thousand years ago, and these instruments are still in use today. The Westerner can not appreciate the symbolism involved in these instruments.

29. Elson, Louis E. Curiosities of Music. p. 149
30. Ibid. p. 150

The "tchu" is a plain wooden box, about a foot and a half deep, in which a hammer is fastened; by introducing the hand into a small aperture made for that purpose in the side of the instrument, the hammer is agitated, and swaying from side to side, produces a sort of tattoo on both sides of the box. This scarcely can be called music for it is doubtful if the sound is even rhythmic; but it is not the sound alone which captivates the Chinese ear, the symbol attached to it moves the Chinese heart, for the sages assure us that this clatter represents (in some mysterious way) the advantages of the social intercourse of men, and the mutual benefits of society. The tchu is placed at the north east of the other instruments, and is played at the commencement of a composition.

"The "ou" (or yu) is an image of a sleeping tiger, and is a symbol of the power which man has over all other creatures. It is placed at the north west of the other instruments, and is played at the close of a piece of music. Along the back of this image is a row of pegs; when the instrument is well played, six tones can be extracted from these wooden pegs, but usually the performance is ended by the player running the stick, by which the pegs are struck, swiftly along the whole row, finishing with a couple of blows on the tiger's head. This is repeated three times as finale."[31]

Hermann Smith, too, has such an effervescent comment on this strange instrument that it is well worth recording. "The

31. Elson, Louis E. Curiosities of Music. p. 152

Yu is so singular and original in character, that it is worth serious consideration whether it would not be well to introduce it into our orchestra, to further the Wagnerian development of the music of the future. We have great use in our day for triangles and cymbals, but they cannot reach the effect produced by the Tiger.

"At the end of the grand Confucian Hymn performed in the presence of the Emperor and all his court, attended by his feather-swinging dancers, the chief officer assigned to this service strikes the Tiger on the head three times; three fateful knocks (thus let it be noticed anticipating Beethoven's ominous device). Then with a vigorous swish he passes his stick three times along the projections on the Tiger's back to announce the end of the strophe; three weird screeches are heard succeeding each other (to the great delight of Straussians) rapid as flashes of lightning, and in a hideous screech the scene ends.

And,--the Emperor retires."[32]

A wooden fish, invented long ago and still used in China, is suspended outside the general's door. When any one wishes to communicate with the general, he picks up two wooden sticks and strikes the fish. A code is also used to describe the type of business the visitor wishes to discuss with the general.

7. Bamboo is held high in the estimation of the Chinese

32. Smith, Hermann. The World's Earliest Music. p. 273

as musical material. The Koang-tsee, or Pipes of Pan, invented by Ling-lun was described in a previous passage. The Chinese had several flutes made of bamboo. The yo, the ty, and the ancient tche were three that were quite difficult to play.

8. Gourd is used as the reservoir for air for the "cheng", which is a small portable organ blown by the mouth. For an illustration see the Chinese sketches in this thesis. Thirteen to twenty-four pipes of bamboo, each with a vibrating tongue of copper or gold, are inserted in holes in the gourd. The player blows into the gourd.

SUMMARY

As a conclusion to this thesis, I have prepared "thumb-nail" accounts of the most important ancient instruments which will furnish a summary that is concise, accurate, and readily usable.

Percussion Instruments.

Drum:- covered with parchment or skin at both ends or at one end only; beaten by drumsticks or by the hands. Possessed by Egyptians and Assyrians. Hebrew toph may have been hand-drum. Chinese had drums called po-fu, chin-ku, lei-ku, and ying-ku.

Tambourine:- a frame (round, square, oblong) over which a sking is stretched. Catgut cords on inside increase vibration. Bar across the middle makes a double tambourine. Hebrew name for this instrument was probably toph; English, timbrel or tabret. Tambourines possessed by Egyptians and Assyrians.

Cymbals:- soup-plate shaped or funnel-shaped. Made of bronze or copper-silver. "Loud" cymbals possibly larger than "high-sounding" cymbals. Hebrew cymbals--tzeltzelim and metzilloth. Large cymbals became gongs; small ones, casta-

nets.

Sistrum:- horseshoe-shaped frame through which metal bars were passed. Bars rattled when shaken. Rings were sometimes placed on the bars. The Hebrew menaaneim may have been sistrum. Egyptians had many varieties.

Crotola:- two balls on handles held in the hand of the performer and struck together for rhythm. The balls were often in the shape of heads. Used in Egyptian dances.

Bells:-arose from tiny ornaments to bells arranged in the musical scale. Used by Egyptians, Assyrians, Hebrews, and Chinese.

Wind Instruments.

Single-pipe:- simplest form of wind instrument. Found in all nations. The Chinese have an ocarina and a Hiuen or whistle. Pipes of Pan--several single-pipes bound together.

Double-pipe:- two single-pipes, usually having reeds like our oboes. Used by Egyptians, Assyrians, Greeks.

Fluta:-(1) simple flute blown at the end, (2) transverse flute, blown at a hole in the side, (3) flageolet flute, blown at the end and furnished with a diaphragm. Egyptians used flutes of all lengths.

Bag-pipe:- Hebrew bag-pipe was the sumphonia and probably the magrepha; Greek bag-pipe was the "ascaulos"; Roman, "tibia utricularis".

Trumpets:- Shophar and keren of Hebrews were made of a ram's horn. Chatzozerah like the shophar until after the Exile; later, a long slender trumpet like the Greek "salpinx" and the Roman "tuba". Roman "cornu" was a curved instrument in a half-circle; Roman "lituus" a straight, slender instrument with the bell curved upward. Roman "buccina" a conch shell. Chinese trumpets were "hwang-teih" and "haot'ung" and had sliding tubes.

<u>Stringed Instruments</u>.

Harp:-large harps found in Egypt, highly ornamented, and with as many as twenty-one strings. Assyrian harp ranged to four feet high.

Kinnor:- used by the Hebrews. Probably a lyre.

Lyre:-favorite Greek instrument. Kithara was the Greek professional lyre.

Trigonon:- three-sided string instrument, played with a plectrum. Used by Egyptians and Assyrians.

Dulcimer:- uncertain as to the authenticity of translating certain stringed instruments as dulcimers.

Nebel-Asor:- the nebel was a stringed instrument played with a plectrum..The asor was probably a variation of the nebel, with ten strings. Used by Assyrians, Egyptians, and Hebrews.

Tamboura:- a long-necked stringed instrument played with a plectrum. Used by the Egyptians and the Assyrians.

Kin and Che:- Chinese stringed instruments. Strings were stretched over long boards. Kin often five and a half feet long; che often nine feet with fifty strings. Kin signified life; the che represented death.

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APPENDIX

Excerpt from Wagner's Siegfried as Translated by Oliver Huckel

At length, one song-bird tranced his listening ear,
Perched in the boughs above him, and he spake:
"Thou warbler, never have I heard before
Thy happy voice. Here dost thou make thy home?
Ah, could I understand thy blissful strain,
Perchance thy cadences would utter soft
Some story of my loving mother's fate.
That drivelling dwarf has often said to me
That song of birds had meaning in their strains
And men might understand. Would I might know!"

He paused in thought. Sudden he spied a clump
Of growing reeds. Impetuous came his speech:
"Ha! on these reeds I will his song essay,
And echo all his warblings to the life;
Yea, pipe the notes, although the meaning's veiled.
Perchance, as I am singing with his notes,
The hidden meaning may reveal itself."

Speaking he ran, and with his keen-edged sword,
Cut off a reed, and fashioned a rude pipe.
Now, as he worked, the warbling songster paused,
And Siegfried cried: "He listens for my song."

Wherewith he played upon his reedy pipe,
As best he could, the wood-notes of the bird;
But shrill his strains, too loud or else too low.
Full many times he tried, but shook his head
Discouraged at his music. Thus he mused:
"No bird-song that! Upon this reedy pipe
That blithesome melody may not be waked.-
Methinks, sweet warbler, I am dull indeed,
Yet not so lightly is thy sweet speech learned,
How by the shrewd wee piper am I shamed;
He peeps, and vainly listens for my song.-
Ho there! now hearken as I play my horn;
Some bitter notes than on the stupid reeds;
A wood-song now my dusty horn shall wind,
Listen, sweet bird, my best I blow for thee.
Long for a loving comrade have I called;
Naught better came as yet than wolf and bear.
Now let me see, as a fair note I blow,
Whom will it lure, as loving comrade mine?"

So saying, far away he flung the reed,
And lifting to his lips the silver horn,
That oft in hunting woke the echoes far,
He blew upon it a right merry blast.